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SFORL Guidelines

# French otorhinolaryngology society guidelines for day-case nasal surgery



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## ARTICLE INFO

### Keywords:

Rhinology  
 Sinus surgery  
 Day-case surgery  
 Guidelines

## ABSTRACT

**Objectives:** The French Otorhinolaryngology Society (SFORL) set up a work group to draw up a consensus document on day-case surgery in four rhinologic procedures: endoscopic middle meatal antrostomy (French National Health Insurance (CCAM) code GBPE001), septoplasty (GAMA007), and reduction of nasal bone fracture using a direct approach (LAEA007) and using a closed technique (LAEP002).

**Materials and methods:** Methodology followed the French Health Authority (HAS) "Methodological Bases for Drawing Up Professional Guidelines by Formalized Consensus" published in January 2006; the method chosen was the short version of the RAND/UCLA Appropriateness Method (without editorial group), as the work group topic was highly specialized, with few experts available.

**Results:** Ahead of any day-case sinonasal surgery, it is recommended that patient eligibility criteria be respected and hemorrhagic risk assessed; preference should be given to short procedures involving little variation in surgery time and minimizing blood-loss, and associated procedures (e.g., septoplasty + turbinectomy) should be avoided. The patient and family should be informed of specific hemorrhagic, orbital and/or neuromeningeal risks, onset of which may preclude discharge home. Uni- or bilateral postoperative nasal packing is not a contraindication to day-case management.

**Conclusion:** All four procedures may be performed on a day-case basis. Eligibility criteria should be systematically respected, but hemorrhagic risk, which is very specific to the sinonasal organ, is to be assessed on a case-by-case basis, as it is a major issue in this kind of management for a non-negligible number of patients.

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## 1. Introduction

Day-case surgery has been developed to meet governmental and public demand for resource optimization ensuring health care quality and safety. The objective is to reduce treatment time, nosocomial infection risk and admission costs.

English-speaking countries implemented day-care surgery in rhinology earlier than France. In 1992, the Royal College of Surgeons of England declared that day-care was now considered the best option for 50% of patients undergoing selected procedures, with proportions varying between specialties [1]. More recent studies

reported 15% to 95% feasibility for day-case sinonasal procedures [2–4].

In 2010 in France, just over 37% of surgical procedures, taking all specialties together, were performed on a day-case basis [5]. The 1999 study by the Center for Research, Studies and Documentation in Health Economics (Centre de Recherche, d'Études et de Documentation en Économie de la Santé: CREDES) reported a huge discrepancy between the potential for day-case nasal surgery, estimated at 52–55%, and an actual implementation rate of 9% [6]. A health insurance study published in 2003 assessed the potential for crossover to day-case surgery in 18 landmark procedures in 34,015 admissions in June 2001 in 1280 health care centres: applying the 1999 eligibility criteria, nasal surgery was a field in which the observed mean weighted rate of day-case management was more than 30% less than the minimum mean weighted eligibility [7].

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Given the strength of the economic, administrative, political and social demand, the French Otorhinolaryngology Society (SFORL) took on the responsibility of promoter for day-case surgery guidelines for 4 simple and frequent nasal procedures in which day-case management is late in being implemented in France: endoscopic middle meatal antrostomy (French National Health Insurance (CCAM) code GBPE001), septoplasty (GAMA007), reduction of nasal bone fracture using a direct approach (LAEA007) and using a closed technique (LAEP002).

The task was entrusted to the French Rhinology Association (AFR), using the formalized expert consensus methodology suggested by the French Health Authority (HAS: <http://www.has-sante.fr>). A pilot group dealt with the logistics of the consensus conference, selection of members for the grading group and literature analysis from the PubMed database. Each article was graded for level of evidence. An initial series of guidelines was drawn up on the basis of a position paper, assessed by the grading group and modified according to the results and comments. This second guidelines series was resubmitted to the grading group, which drew up the final version.

## 2. Results

### Guideline 1

Ahead of any sinonasal day-case surgery, patient eligibility criteria should be respected. **Strong agreement.**

Day-case surgery is regulated and should conform to a specific organizational pattern to optimize the patient's pathway and ensure that risk is no greater than in conventional admission. Patient safety should be ensured by respecting the specific day-case surgery good practice guidelines laid down by the HAS Health Authority, National Agency for Support of Performance in Health Care and Medico-Social Establishments (Agence Nationale d'Appui à la Performance des établissements de santé et médico-sociaux: ANAP) and the French Society of Anesthesia and Intensive Care (SFAR) [5,8]. Day-case surgery is patient-centered, respecting a clinical pathway from the consultation enabling selection for day-case management through to discharge. Selection is a key factor for success.

In sinonasal surgery, the use of general anesthesia and the significant risk of postoperative haemorrhage require rigorous patient selection. Patients must have understood and agreed to all of the aspects of day-case management. Home monitoring is mandatory and patients must respect the postoperative prescriptions and recommendations and be accessible to treatment in case of complications. It must therefore be ensured that the patient is accompanied home by a responsible adult, is not left alone during the night of discharge, and has a sufficient level of understanding. In the case of children, patients with mental disorder or not speaking French, it must be ensured that the accompanying adult understands the discharge procedure. Patients must not have psychiatric disorders that would prevent cooperation with the medical team. Transport and distance are not exclusion criteria; but, given the specific risks, each case is to be assessed on an individual basis and, if the patient's distance from the hospital is too great, an agreement with a nearby health care facility should be undertaken. Home access and equipment and the availability of a telephone are factors to be taken into account.

After assessment, the surgery team needs to be aware of the probability and potential seriousness of specific possible risks and the time of onset so as to determine the duration of postoperative monitoring, compatibility with the working hours of the

### Guideline 2

Only patients free of haemorrhage risk factors are eligible for sinonasal day-case surgery. **Relative agreement.**

### Guideline 3

Due to the haemorrhage risk inherent to sinonasal surgery, day-case management should not be proposed to patients with haemostatic disorder or taking anticoagulant and/or antiplatelet therapy. **Relative agreement.**

department, suitable theater scheduling and the rate of complications during the first 24 postoperative hours.

The 2010 SFORL good practice guidelines detail the indications for and principles of endoscopic endonasal middle meatal antrostomy, so as to define the range of indications, specify the technical context and reduce the rate of complications [9]. The immediate risks comprise epistaxis and orbital penetration, either asymptomatic or impairing ocular motion and/or orbital hematoma. Immediate postoperative surveillance in the recovery room and for the first 6 hours following surgery should be alert to these possible complications.

No specific studies could be found in the literature of risk in middle meatal antrostomy as such. However, a retrospective study of 257,310 sinus surgeries (antrostomy, dacryocystorhinostomy, Caldwell–Luc, Draf, sphenoidotomy, ethmoidectomy) reported that 1.25% of patients remained in hospital for surveillance and 3.15% were readmitted during the days following surgery, in 50% of cases due to haemorrhage [4]. Another study, of 62,823 endoscopic endonasal procedures, reported 0.76% epistaxis requiring transfusion [10]. A meta-analysis in 2012 calculated the incidence of minor and major complications in 13,405 patients undergoing endoscopic sinus surgery and reported 2.4% postoperative (<24 h) epistaxis requiring packing, 0.3% orbital haematoma, loss of vision or transient or definitive diplopia and 0.2% postoperative haemorrhage requiring transfusion [11].

No studies could be found in the literature focusing on early postoperative (<24 h) complications after septal surgery. Several studies mentioned hemorrhagic complications, affecting 0–7% of cases, and mainly comprising septal hematoma and epistaxis at unpacking dates [12–15].

### Guideline 4

Due to the hemorrhage risk inherent to sinonasal surgery, surgical techniques minimizing such risk are recommended. **Relative agreement.**

In the literature, haemorrhage risk is assessed in isolated procedures or with other associated sinus or septal surgeries. Subgroups, however, have not been compared and haemorrhage risk is difficult to quantify for a given procedure in a given population. Association (septoplasty + antrostomy, or septoplasty + inferior turbinectomy) is a frequent attitude. Standard procedure is to assess postoperative haemorrhage risk according to the extent of tissue elevation and of mucosal deterioration, especially involving erectile structures and nasal regions with a vascular pedicle.

Certain risk factors, however, seem to be established. A retrospective Spanish study of 145 patients showed that the statistically significant predictive factor for poor outcome in endoscopic day-case surgery was revision surgery: readmission rates were 3.5-fold higher for revision than for primary surgery (95% CI, 1.216–10.075;  $P=0.024$ ) [16]. A retrospective study from 2006 on the effects of day-case management in 432 septoplasties found 8.8% readmission within 24 hours of discharge, regardless of age, gender, history or

the surgeon's experience. Surgery time was not a significant factor of readmission, nor was the septoplasty technique, except for submucous resection. However, revision, procedures associated to submucous resection (biopsy, functional endoscopic sinus surgery), use of septal splints and postoperative diclofenac (implicated in 13% of the readmissions for postoperative haemorrhage) were statistically significant predictive factors for poor outcome in day-case management [3].

#### Guideline 5

Sinonasal day-case surgery requires information provided to patient and family regarding specific risks: hemorrhagic, orbital and/or neuromeningeal. **Strong agreement.**

Sinonasal surgery involves risk of specific complications: hemorrhagic, orbital and meningeal; these require preventive measures and screening to avoid decompensation after discharge home.

In endoscopic sinus surgery, risks are clearly identified:

- 1.5% orbit penetration with or without ecchymosis or subcutaneous emphysema;
- 2.4% postoperative (< 24 h) epistaxis requiring packing;
- 0.3% orbital haematoma, loss of vision or transient or definitive diplopia;
- 0.3% osteomeningeal rupture and intracranial complications;
- 0.2% postoperative haemorrhage requiring transfusion [11].

No articles were found analysing complications within 24 hours of septoplasty. Factors for readmission seem to be identified (revision, associated surgeries, septal splints and postoperative NSAIDs) but with an explanatory power of only 9% [3].

Several reports stress the prime importance of strictly respecting eligibility criteria, precise information on home arrangements, social factors and communication and understanding of patient information [3].

#### Guideline 6

Sinonasal day-case surgery requires information provided to patient and family regarding possible postoperative packing and its consequences: acute nasal obstruction, snoring, apnea, broken sleep, vasovagal response. **Relative agreement.**

#### Guideline 7

Sinonasal day-case surgery contraindicates driving, requiring the patient to be accompanied for the journey to and from the hospital and during the first night at home. **Relative agreement.**

#### Guideline 8

Uni- or bilateral postoperative nasal packing is not a contraindication to day-case management. **Strong agreement.**

#### Guideline 9

Due to general anesthesia and possible acute postoperative nasal obstruction following sinonasal surgery, day-case management should not be proposed in case of moderate to severe OSAS, with or without continuous positive airway pressure machines. **Relative agreement.**

The side-effects of postoperative packing are hard to assess, as the literature is incomplete, with varying techniques and durations; methodologies and data are not superimposable. Nevertheless, some studies provide objective elements.

A single-centre retrospective comparative study found no significant difference in readmission after septoplasty with (168 cases, 12%) or without (181 cases, 6%) postoperative packing ( $P=0.361$ ) [3]. In contrast, in a single-centre retrospective non-comparative

study of 78 patients undergoing day-case septoplasty under general anesthesia without nasal packing but with mucoperichondral flap suture, 19 patients (24.3%) had to be kept in hospital, including 6 (7.7%) for epistaxis, 3 of whom required packing [17]. A more recent retrospective comparative study of 697 septoplasty patients found no significant difference in rates of postoperative epistaxis and septal hematoma between the 363 patients with trans-septal suture and the 334 with 48 hours' bilateral packing; the only difference concerned postoperative pain (2.3 vs. 4.8, respectively;  $P<0.05$ ) [18].

The effects of acute nasal obstruction on hematoses and respiratory rhythm were investigated in a prospective case-control study, including 12 controls and 25 patients without OSAS (obstructive sleep apnea syndrome) operated on by septoplasty with bilateral occlusive nasal packing and 15 with OSAS receiving the same treatment: the AHI (apnea-hypopnea index) increased significantly in both patient groups, without significant difference in mean  $O_2$  desaturation, but with a significant difference between pre- and postoperative  $O_2$  desaturation in the non-OSAS septoplasty group [19]. A prospective randomized study of 39 patients, assessed the impact on hematoses and heart rhythm of partially (19 cases) or totally (20 cases) obstructive nasal packing after septoplasty; total packing induced a slight change in  $HCO_3^-$  concentration and  $CO_2$  partial pressure but not  $O_2$  partial pressure, saturation or pH; there were no significant differences within the partial obstruction group, and comparison between the two groups revealed no significant difference. The authors account for these changes in blood gas content by increased respiratory rate and  $CO_2$  expiration in acute nasal obstruction. Holter ECG revealed increased minimum and decreased maximum heart rate in both groups without change in mean heart rate, with significantly decreased ECG signs of sympathetic activity and increased signs of parasympathetic activity. There was, however, no significant difference between groups: the observed effects were due not to nasal obstruction but to pressure on the airway mucosa, stimulating parasympathetic activity and naso-cardiac (trigemino-vagal) reflux; this effect persisted until removal of the various packings [20].

#### Guideline 10

Orbital and/or meningeal rupture during sinonasal day-case surgery contraindicates discharge and requires crossover to conventional admission to ensure treatment. **Strong agreement.**

In endoscopic sinus surgery, the incidence of osteomeningeal rupture is 0.3–1%, orbital rupture with or without ecchymosis or subcutaneous emphysema 0.07–1.5% and orbital hematoma with or without diplopia 0.3% [10,11].

The literature reports serious complications in septoplasty. They are exceptional and due to surgeon error: oronasal communication [21], anosmia [22], carotid-cavernous fistula [23], osteomeningeal rupture or meningo-encephalocele [24,25].

They require specific treatment, contraindicating discharge.

#### Guideline 11

Endoscopic middle meatal antrostomy should be performed on a day-case basis in case of eligibility. **Relative agreement.**

#### Guideline 12

In endoscopic middle meatal antrostomy, medical examination should be performed before discharge from day-care to check against posterior bleeding and orbital, neurologic or meningeal complications. **Relative agreement.**

Three studies reported experience of day-case middle meatal anastomosis, taking all indications together [2,4,16], all confirming feasibility. There were, however, clear limitations:

- intra- or postoperative hemorrhage, related to anticoagulation therapy (antiplatelets, vitamin K inhibitors), is a contraindication to day-case surgery in patients requiring anticoagulation therapy at effective dose;
- likewise, early postoperative epistaxis is a contraindication to day-case surgery;
- nasal packing does not seem to be a contraindication;
- orbital wall rupture may lead to fat infiltration of the nasal fossa and/or intraorbital hemorrhage requiring monitoring and adapted treatment.

Concerning discharge, article D 6124-101 of the French Public Health Code stipulates that the anaesthetist, in agreement with the surgeon, decides crossover to conventional admission or discharge. Discharge authorization is a medical decision, requiring the signature of one of the structure's physicians. In terms of professional responsibility, each physician in charge of the patient is responsible for his or her own acts in exactly the same way as in conventional admission [8,26].

#### Guideline 13

Septoplasty may be managed on a day-case basis. **Relative agreement.**

#### Guideline 14

Septoplasty associated to inferior turbinectomy may be managed on a day-case basis. **Disagreement.**

Septoplasty is a general term covering procedures ranging from submucous resection of a septal bone spur to global treatment of the skeleton by the Cottle operation. This diversity hinders analysis of the literature, as does the diversity of methods and durations of contention and packing. On the other hand, there are more studies available than for anastomosis. Several older studies drew conflicting conclusions regarding day-case management of septoplasty, due to readmission rates that varied from 2% to 13.4% [27–31].

More recently, in a series of 432 septoplasties with a mean patient age of 34.8 years, 38 patients were readmitted within 24 hours of discharge: i.e., 8.8%. In 50% of cases, readmission was for bleeding, followed, in decreasing order, by other (unspecified) medical reasons, patient demand, unsuitable discharge circumstances, prophylactic treatment of deep venous thrombosis, and unexpectedly extensive surgery [3].

A Spanish retrospective study of 145 uni- or bilateral sinus procedures found that associated septoplasty was not a factor for readmission. The septoplasty techniques in question, however, were not specified, nor were the type and duration of septal contention [16].

American statistics for 2006 showed that discharge home was feasible for 93.07% of the 340,405 patients aged between 15 and 64 years undergoing ambulatory septoplasty and/or turbinectomy (92.9% under general anaesthesia). The rate of unscheduled post-surgical surveillance or conventional admission was 5.72%. The rate of nausea with or without vomiting was 0.9%. Only 0.1% of septoplasty patients consulted in Accident and Emergency, for reasons not stated, after surgery. Once again, septoplasty techniques and septal contention methods were not specified, and it was not shown whether there were any differences between septoplasty alone or associated to turbinectomy [4].

A feasibility study for day-case septoplasty and septorhinoplasty was performed in the ENT Department of the University Hospital of Bordeaux (France) in a retrospective population of 424 patients [32]. The principal objective was retrospective risk assessment; the secondary objective was to determine the number of patients who could have been candidates for day-case management by applying eligibility criteria retrospectively to a population managed conventionally. Forty-seven patients (11.8%) presented anesthesia-related contraindications to day-care at the anesthesiology consultation: 34 sleep apnea syndromes, 3 non-stabilized ASA grade 3 cases, 8 under antiplatelets, 1 case of thalassemia, and 1 patient not understanding French. On eligibility criteria preceding those published by the SFAR in 2009, 85 patients (20.1%) resided at more than 100 km (> 1 hour) from the centre. Induction time was too late in the day in 161 cases (38%). One hundred and ninety-seven procedures lasted more than 90 min. Recovery room data showed 23 patients (5.42%) with one or more items preventing discharge home: 14 cases of pain, 8 of nausea and vomiting, and 1 of epistaxis requiring surgical revision. Taking all this together, 355 patients (83.7%) did not meet the eligibility criteria for day-case management; 69 patients (16.3%) would have been candidates [32]. Applying the SFAR 2009 eligibility criteria, which do not include distance of residence but rather the feasibility, whatever the distance, of ensuring continuity of care, increased eligibility to 40.8% (154 patients) [8]. The following year, 107 rhinology patients underwent day-case surgery, including 39 septoplasties; 7 were associated to sinus surgery: middle meatal anastomosis, polypectomy, Eyries method. Mean surgery time was  $51.4 \pm 21$  min. All patients received Cottle septoplasty with packing. Crossover to conventional admission was 7.69%: 2 late inductions and 1 return to theater within 6 hours for septal hematoma. There were no returns to emergency; 1 patient was readmitted at D7 for septal hematoma (i.e., readmission rate, 2.5%).

#### Guideline 15

Day-case surgery is not recommended, except in special cases at the surgeon's discretion, in traumatic septal deviation and/or septoplasty revision, due to excessive and variable surgery time and a higher rate of complications, disturbing day-care unit organization. **Relative agreement.**

Several studies identified revision surgery as a factor for longer surgery time and higher rates of readmission [3,16].

A multicentre retrospective study of day-case surgery, including 48,170 septoplasties with or without associated turbinectomy, reported a mean surgery time of  $49.6 \pm 4.8$  min and total theater time of  $79.8 \pm 5.8$  min; mean surgery time in the 12,819 rhinoplasties was  $98.6 \pm 13$  min and total theater time  $136.4 \pm 13$  min [33]. The authors point out that surgery time is intimately related to cost, turnover and care quality, the latter depending on surgery time as such, feasibility of discharge and patient satisfaction. Under- and over-estimation of surgery time are both problematic for the structure [34,35]. Long procedures, especially with wide confidence intervals as in rhinoplasty, should not be given priority over septoplasty, due to the variation in surgery time. Procedures with greatly varying surgery time impair structure efficiency in terms of the number of cases managed per day and cause delay and disorganize scheduling, in turn impairing patient satisfaction [33].

No French language publications were found analysing day-care septoplasty.

The Bordeaux University Hospital feasibility study of 424 septo- and septorhinoplasties reported mean surgery time of  $75.8 \pm 32$  min in septoplasty (GAMA 007) versus  $127.5 \pm 44$  min in septorhinoplasty ( $P < 10^{-5}$ ). In patients operated on for the first time, mean surgery time was 91 min, versus 140 min for revision



surgery ( $P < 10^{-5}$ ). Repair of congenital deformity took a mean of 80 min, versus 111 min for post-traumatic deformity ( $P < 10^{-5}$ ). Twenty-three patients (5.66%) had postoperative complications: epistaxis within 6 hours of surgery (0.24%) requiring surgical revision the same day and crossover to conventional admission: i.e., 0.26% immediate return to theater. There were also 11 septal hematomas at D4 (2.59%) and 5 at D8 (1.18%), 2 cases of superinfection with opening of the surgical approach (0.47%), 1 hemorrhage on unpacking (0.24%), 1 cartilage graft superinfection (0.24%), and 2 readmissions (0.48%), respectively for pain resistant to step 1 analgesia and for iterative vasovagal response. Four of these 23 patients were not eligible for day-case management due to anesthesia-related contraindications. Fourteen underwent revision, with mean surgery time of  $120 \pm 46$  min and a complications rate for revision of 19.7% (14/71). The other 9 were primary cases, with mean surgery time of  $79 \pm 36$  min, and a complications rate for primary surgery of 2.6% (9/353) [32].

#### Guideline 16

Septal contention is not a contraindication to day-case management. **Strong agreement.**

Three single-centre retrospective studies included day-case septoplasty: 2 comparative, the other not. Readmission and bleeding rates did not differ according to packing or postoperative trans-septal suture [3,17,18].

On the other hand, Georgalas et al. reported that septal splints were associated with higher readmission rates [3].

#### Guideline 17

Following septoplasty, medical examination should be performed before discharge from the day-care structure to check against posterior bleeding and neurologic or meningeal complications. **Strong agreement.**

Like in middle meatal antrostomy, each physician's responsibilities are the same in day-care as in conventional admission. Specific risks should be assessed before discharge by physicians trained in day-case surgery.

#### Guideline 18

In children, surgical reduction of nasal bone fracture should be performed on a day-case basis if eligibility criteria are met.

**Relative agreement.**

#### Guideline 19

In adults, surgical reduction of nasal bone fracture should be performed on a day-case basis if eligibility criteria are met.

**Relative agreement.**

#### Guideline 20

Following surgical reduction of nasal bone, medical examination should be performed before discharge from the day-care structure to check against complications, especially hemorrhagic. **Relative agreement.**

In an American National database for day-case surgery, about 15,810 open nasal bone fractures were reduced on a day-case basis in 1996 and 11,630 in 2006, with no particular problems [36].

In the same data-base, about 1,200,000 children were managed on a day-case basis in 2006, about 11,000 of whom had nasal bone fracture reduction. Although specific postoperative course was not reported, in the population as a whole, taking all procedures

together, 1.3% of the children were kept in for surveillance and 0.3% were readmitted [37].

### 3. Conclusion

All four of these sinonasal procedures can be performed on a day-case basis. The proportion of eligibility, however, is hard to judge from the literature. While eligibility criteria should always be adhered to, the highly specific hemorrhagic risk in the sinonasal organ needs to be assessed on a case-by-case basis, as it constitutes a major limitation on this attitude for a non-negligible number of patients. The nasal contention system, if applied after such surgery, on the other hand, is not a limiting factor.

### Acknowledgments

The pilot group thanks all the members of the grading group for their involvement in the project: Dr Dominique Allard, ENT, Private practice, Périgueux; Dr Matthieu Ammar-Khodja, Maxillo-facial, Clinique du Tondu, Bordeaux; Dr Beloeil, Anesthetist, Pontchaillou University Hospital, Rennes; Dr Philippe Boudard, ENT, Clinique Saint-Augustin, Bordeaux; Pr Laurent Castillo, ENT Dept, Nice University Hospital; Pr Frédéric Chabolle, ENT Dept, Foch Hospital, Suresnes; Dr Franck Cognard, ENT, Private practice, Besançon; Pr André Coste, ENT Dept, Créteil Local Hospital Center and Henri-Mondor University Hospital (AP-HP); Pr Louis Crampette, ENT Dept, Montpellier University Hospital; Dr Antoine Delagranda, ENT Dept, Saint-Denis University Hospital, La Réunion; Pr Patrick Dessi, ENT Dept, La Timone University Hospital, HP-HM, Marseille; Dr Céline Desvant, ENT Dept, Jean-Bernard Hospital, Valenciennes; Pr Xavier Dufour, ENT Dept, Poitiers University Hospital; Dr Marc Durand, ENT Dept, Émile-Roux General Hospital Center, Le Puy en Velay; Dr Corinne Eloit, ENT Dept, Lariboisière Hospital, AP-HP, Paris; Dr Frédéric Facon, ENT, Clinique Clairval, Marseille; Pr Laurent Gilain, ENT Dept, Clermont-Ferrand University Hospital; Pr Philippe Herman, ENT Dept, Lariboisière Hospital, AP-HP, Paris; Pr Roger Jankowski, ENT Dept, Nancy University Hospital; Dr Amandine Lechot, ENT Dept, Bordeaux University Hospital; Dr Bertrand Lombard, ENT Dept, Desgenettes Military Hospital, Lyon; Pr Olivier Malard, ENT Dept, Nantes University Hospital; Dr Justin Michel, ENT Dept, La Timone University Hospital, HP-HM, Marseille; Pr Sylvain Morinière, ENT Dept, Tours University Hospital; Dr Geoffroy Mortuaire, ENT Dept, Lille University Hospital; Pr Karinne Nouette, Anesthesiology Dept, Bordeaux University Hospital; Dr Mickaël Papaxanthos, ENT, Clinique Tourny, Bordeaux; Dr Jean-François Papon, ENT Dept, Créteil Local Hospital Center; Dr Josiane Percodani, ENT Dept, Toulouse University Hospital; Pr Emile Rey, ENT Dept, Grenoble University Hospital; Dr Guillaume Tous-saint, ENT, European Medico-Surgical Center, Le Port-Marly; Pr Sébastien Vergez, ENT Dept, Larrey Hospital, Toulouse University Hospital.

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